GS Font Editor

by Mark Simonsen
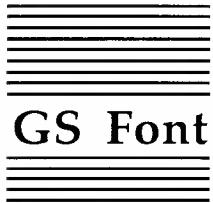
GS Font Editor™

Full Featured Editor for GS Fonts
by Mark Simonsen

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Chapter 1

Welcome to GS Font Editor

Beagle Bros' GS Font Editor is the first *real* font editor for GS fonts available on the Apple II family of computers. It works on the Apple IIe, IIc, IIc+ and IIgs. It's a powerful and quick program that makes modifying existing fonts or creating new ones a breeze. GS Font Editor gives you complete control over every aspect of a font. You can change the font name, ID, size, ascent, descent, leading, kerning and more. You can even scale a font from one size to any other size! And GS Font Editor can edit fonts up to 127 points in size. That's nearly two inches tall!

About the GS Font Editor disk

The GS Font Editor disk is nearly full, so any fonts you create will most likely have to be saved on your own data disks. If you need to format (initialize) a new data disk, use the System Utilities disk or your own favorite disk management software. (Our personal favorite around here is Randy Brandt's TimeOut FileMaster.)

The GS Font Editor disk comes with the following fonts: Times 72, 54, 42, 36, 30, 27, Helvetica 72, 54, 42, 36, 30, 27, and Courier 72, 54, 42, 36, 30, 27.

The GS Font Editor disk is copyrighted but not copy-protected. That means that while it is illegal to give away copies of this disk, you can still easily copy it. We have done this for your convenience and as a favor to you. Please do us a favor by living up to our trust and not giving away copies of our software to other people. Thanks.

Make a back-up copy of the GS Font Editor disk now and put the original in a safe place (out of the reach of little hands covered with peanut butter and jam). You can use TimeOut FileMaster, Diversi-Copy, Copy II Plus, Finder, System Utilities or Filer to make the back-up.

Because the disk is unlocked and unprotected, you can transfer the files from either the 5 1/4" disks or the 3 1/2" disk to a hard disk or RAM disk. To transfer programs or fonts from one disk to another, use TimeOut FileMaster, Copy II Plus, Finder, System Utilities or

Filer. (WARNING: make sure you use FILE COPY and not DISK COPY when you want to copy selected files. Selecting Disk Copy will wipe out the contents of the disk you are copying to.)

Mouse Required

GS Font Editor requires that you have a mouse to edit fonts. While there are many keyboard shortcuts and commands, a mouse is required. The use of the mouse in GS Font Editor is consistent with the Apple Human Interface guidelines. That means if you've ever used any mouse based software before (e.g., painting, drawing or word processing programs) you won't have any trouble using GS Font Editor.

If you've never used mouse software before, there are a few things you need to know how to do:

1. Move the pointer around on the screen. Believe it or not, this is accomplished by moving the mouse around on the desk.

2. Click the mouse button. To do this, press and release the button on top of the mouse. Clicking is used to select an item on the screen like a button, icon, name, or character.

3. Double click the mouse button. Hopefully you won't be surprised to know that for this you press and release the mouse button twice in a row. Double clicking is used as a short cut for selecting an item and performing some action on it like opening a file, choosing a character to edit, etc.

   Note: We let you get a little lazy here. If the item is already selected, you really only have to click on it once more to accomplish the double click.

4. Drag the pointer. The pointer is the little arrow that moves when you move the mouse. To drag the pointer, press the mouse button and continue holding it down while moving the pointer. Dragging is used to draw lines, boxes and circles, and to select menu items.

5. Selecting menu items. To see a menu, position the pointer on one of the menus in the menu bar, press the mouse button and hold it down. To select a menu item from the menu, drag the pointer down to the item and release the button. (Most menu items can also be accessed with a keyboard shortcut.)

Printing Fonts

GS Font Editor can't print fonts on your printer. Use your favorite software to print the fonts that you modify or create—TimeOut SuperFonts, Publish-It, or practically any and all GS specific software.

About this manual

The remainder of this manual is divided into three main sections:

Chapter 2: Anatomy of a GS Font

Chapter 3: GS Font Editor Tutorial

Chapter 4: GS Font Editor Reference

If you haven't done much "playing" with fonts, you will need to read all of chapter 2, Anatomy of a GS Font. If you are somewhat experienced with fonts, you can go straight to the tutorial in chapter 3. And, if you are very familiar with GS style fonts, you can skip the tutorial and head straight for chapter 4, GS Font Editor Reference. Or, better yet, if you're a die-hard font nut you probably don't even need to read this manual. In fact, you're probably playing with the software right now and haven't even cracked it open yet. Oh well.
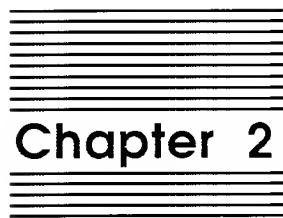
Chapter 2

Anatomy of a GS Font

A font is a complete set of characters of one typeface. Every font has a name (such as Chicago), and a size (such as 12) measured in points. The font size may range from 1 to 127 points, but for readability should be at least 6 points. Point is a typographical term that stands for approximately 1/72 inch. The font size measures the distance between the ascent line of one line of text and the ascent line of the next line of single-spaced text.

Note: The actual font size may be slightly different from what it would be in normal typography. Also be aware that two fonts with the same font size may not appear to be the same size. The font size is most useful for distinguishing different sizes of the same font. (This is true even in typography.)

The font name and size are usually concatenated to form the filename of the font (such as CHICAGO.12). However, this is not required.

A font can consist of up to 255 distinct characters. Not all characters need to be defined in a single font. Figure 1 shows the standard characters in most fonts and their ASCII codes (for example, the ASCII code for "A" is 41 hex or 65 decimal).

Note: Codes $00 through $1F (control characters) and code $7F (delete) are normally non-printing characters.

First Hex Digit

Second Hex Digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			spc	0	@	P	`	p	Ä	ê	†	∞	¿	—	‡	(apple)
1		⌘	!	1	A	Q	a	q	Å	ë	°	±	¡	—	·	Ò
2		✓	"	2	B	R	b	r	Ç	í	¢	≤	¬	"	‚	Ú
3		◆	#	3	C	S	c	s	É	ì	£	≥	√	"	„	Û
4		(apple)	$	4	D	T	d	t	Ñ	î	§	¥	ƒ	'	‰	Ù
5			%	5	E	U	e	u	Ö	ï	•	µ	≈	'	Â	ı
6			&	6	F	V	f	v	Ü	ñ	¶	∂	Δ	÷	Ê	ˆ
7			'	7	G	W	g	w	á	ó	ß	∑	«	◊	Á	˜
8			(	8	H	X	h	x	à	ò	®	∏	»	ÿ	Ë	¯
9			)	9	I	Y	i	y	â	ô	©	π	…	Ÿ	È	˘
A			*	:	J	Z	j	z	ä	ö	™	∫		/	Í	˙
B			+	;	K	[	k	{	ã	õ	´	ª	À	¤	Î	˚
C			,	<	L	\	l	|	å	ú	¨	º	Ã	‹	Ï	¸
D			-	=	M	]	m	}	ç	ù	≠	Ω	Õ	›	Ì	
E			.	>	N	^	n	~	é	û	Æ	æ	Œ	fi	Ó	
F			/	?	O	_	o	del	è	ü	Ø	ø	œ	fl	Ô	

Figure 1.

Each character in a font is defined by bits (or pixels) arranged in rows and columns that form a rectangular array. This bit image is called the **character image**. It's the image inside each of the character rectangles shown in Figure 2.
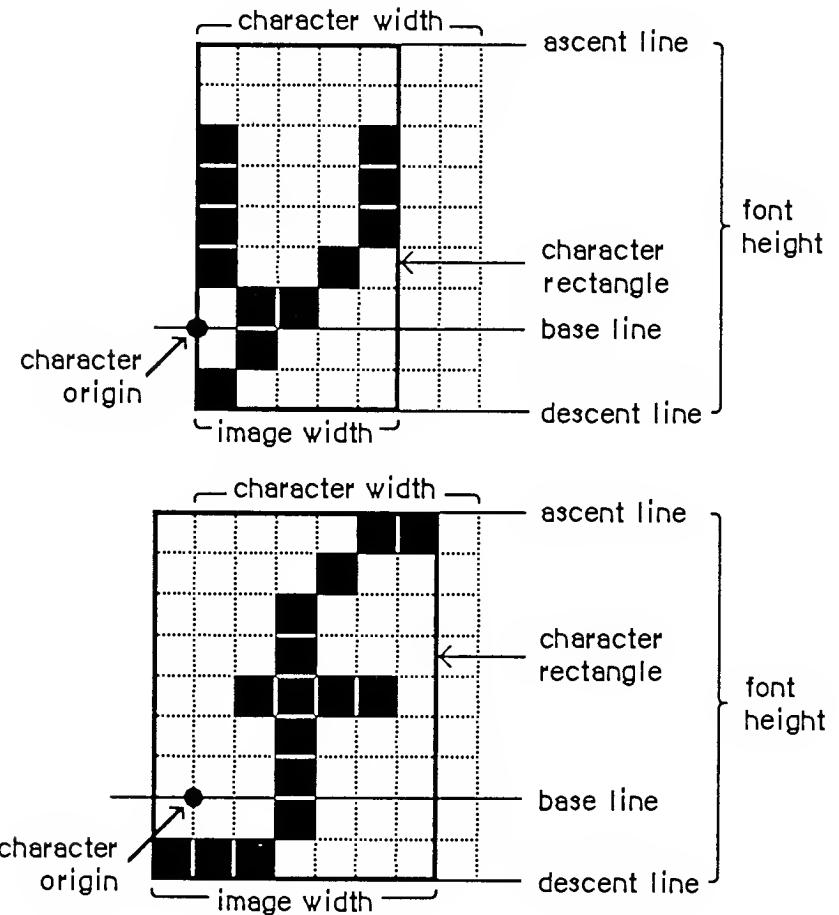
Figure 2.

The number of columns in a character image is called the **image width**. Note that a character can have an image width of 0. For example, the space has a 0 image width. Its character image consists of no pixels at all.

The **character rectangle** is a rectangle that encloses the character image. Its width is the image width of the character, which may vary from character to character in a font. Its height is the character height, which is the same for all characters in a font.

The **character width** is the number of pixels the pen position is to be advanced after the character is drawn. *(By the way, characters are drawn by an imaginary pen!)* This is different from the image width, and the distinction between the two is important. For example, the space character has 0 image width but does have some character width, which determines the size of the space. Some characters have a non-zero image width but a 0 character width; an example of this is an umlaut (¨), which is meant to be typed over a vowel. The umlaut is drawn first, and then the vowel is drawn with the same pen location.

The **character origin** is a point on the base line used to position the pen for drawing. This point may be anywhere within the character image. The character origin is the point where drawing of the character starts.

For many letters, the character origin is located on the left edge of the character image so that, when the character is drawn, its leftmost pixel falls just to the right of the pen. (There's that imaginary pen again.) Sometimes the character origin is between pixels of the character image (or, rarely, entirely to the right of the image). When such a character is drawn, some of its pixels will fall to the left of the pen position. This is called **kerning** to the left. In such a case, the distance, in pixels, from the character origin to the left edge of the character is called the character's leftward kern.

When character image pixels fall to the right of the new pen position after the character is drawn, the character is said to **kern** to the right. Kerning in either direction can cause letters to overlap each other. (See Figure 2.)

Finally, for each character in a font there's a **character offset**. As illustrated in Figure 3, the character offset is simply the difference in position of the character rectangle for a given character and the font rectangle.
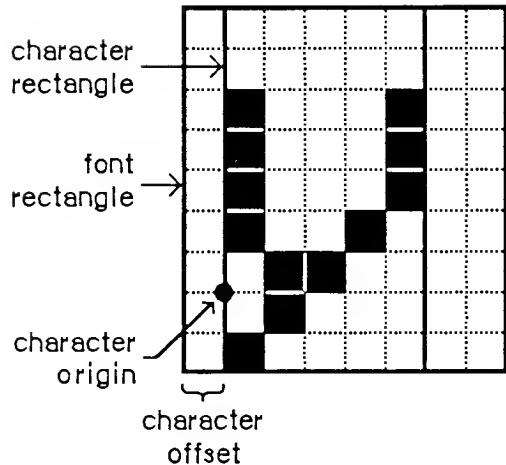
Figure 3.

In addition to the terms used above to describe individual characters, there are terms describing features of the font as a whole. (See Figure 4.)
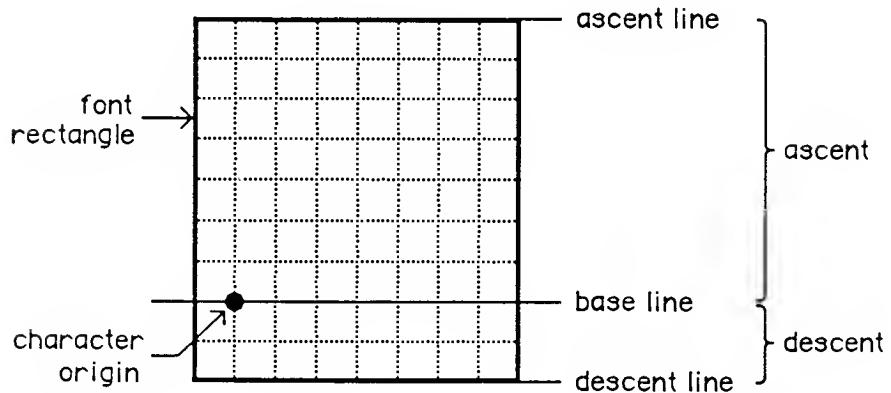
Figure 4.

The **font rectangle** is related to the character rectangle. Imagine that all the character images in the font are superimposed with their origins coinciding. (What a mess that would be.) The smallest

rectangle that could enclose all the superimposed images is the font rectangle.

The **base line** is a horizontal line along the bottom of each character, above the descenders. The base line separates the character into two sets of rows, one above and one below. The base line is in the same horizontal position for every character in the font.

The **ascent** is the distance from the base line to the top of the font rectangle and is the horizontal line just above the top row of a character.

The **descent** is the distance from the base line to the bottom of the font rectangle and is the line just below the bottom row of characters including descenders. A character's descender is the part of the character that lies below the base line. Most characters don't have a descender, but in the average font, characters like "g" and "y" do.

The height of the font rectangle is the **font height**, which is the same as the height of each character rectangle. The maximum height is 127 pixels. The maximum width by definition is 254 pixels. (Note that GS Font Editor artificially limits the maximum width for an individual character to 128 pixels. This is no biggy. We've yet to see a font, including extremely large ones, that even comes close to half of that number.)

The **leading** is the amount of blank space between lines of single-spaced text—the distance between the descent line of one line of text and the ascent line of the next line of text.

Every font has a bit image that contains a complete sequence of all its character images. (See Figure 5.) The character images in the font are stored in the bit image as though the characters were laid out horizontally along a common base line. The character images in the bit image touch each other; no blank space is left between them.
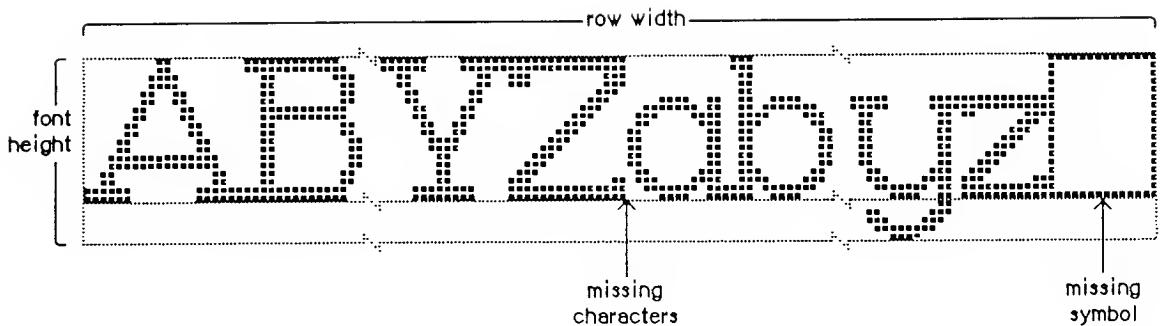
Figure 5.

The bit image doesn't have to contain a character image for every character in the font. Instead, any characters marked as being missing from the font are omitted from the bit image. When a program tries to draw these characters, a missing symbol is drawn instead. The **missing symbol** is stored in the bit image after all the other character images. In many fonts, the missing symbol is a hollow rectangle.

Chapter 3
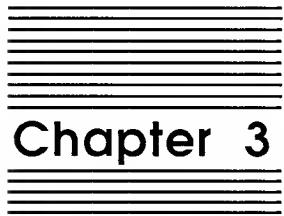
GS Font Editor Tutorial

The following section is a short step-by-step tutorial that helps you quickly become familiar with GS Font Editor. It is a brief overview of the basics of editing a font and is not intended to give a detailed description of every aspect of GS Font Editor. For a more in depth look at GS Font Editor, refer to the reference section.

Using GS Font Editor

Boot your GS Font Editor disk by placing it in your boot drive (usually the first disk drive connected to your computer) and pressing Control-Open Apple-Reset. (GS Font Editor can also be started by double clicking on its icon while in the Finder, or by selecting GSFE.SYSTEM from a program selector, or by typing -GSFE.SYSTEM from the BASIC prompt.)

Soon you will see the Main screen.
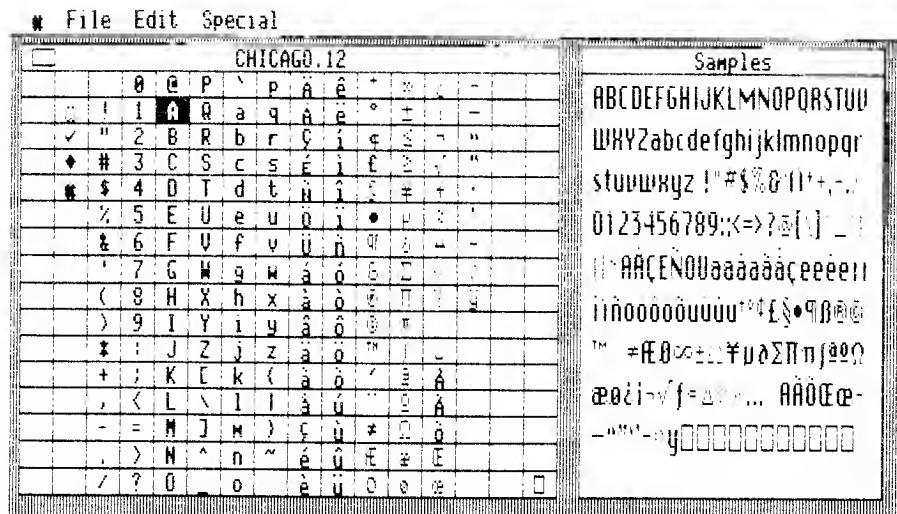
Figure 6.

Notice that, in addition to the menu bar across the top of the screen, there are two windows—the Font window and the Samples window. The Font window shows the name of the font you are editing and a 16 by 16 grid representing all the characters that are in that font. Characters that have not been defined are blank. The Samples window shows as many of the actual characters of the font as will fit in the window. For a small font (14 point and under) you should be able to see most of the characters.

For the purposes of this tutorial, rather than loading a font from disk, we will just use the built-in, default font—Chicago.12. (For information on loading a font file from disk, see the Open command on page 32.)

Selecting a Character to Edit

To select a character to edit, move the pointer to the character you want to edit and double click. For this tutorial, double click on the letter "M". It is "pulled out" of the font and placed on the Edit screen.
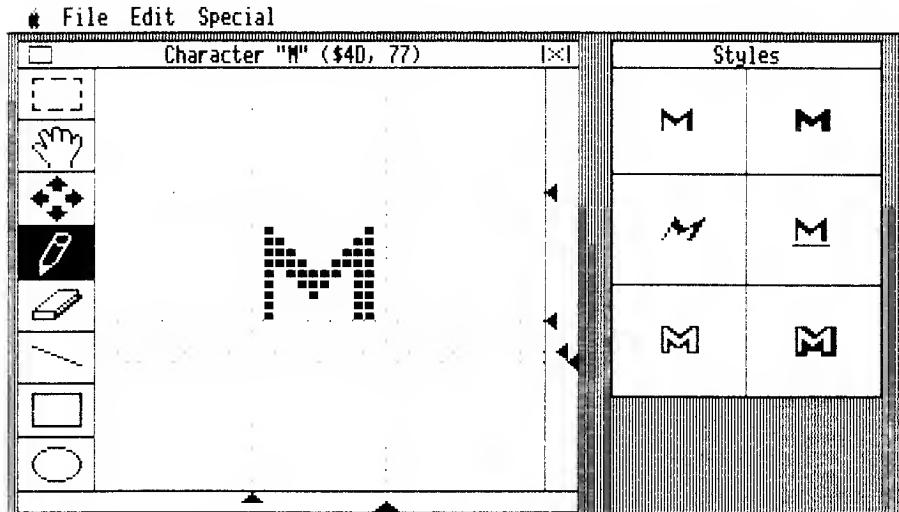
Figure 7.

Notice that there are now two new windows—the Character window and the Styles window.

The Character window shows a magnified view of the character that you chose ("M") and its name and ASCII equivalent (in hex and decimal). Also situated in the Character window are the editing tools and the editing window. The font rectangle controls are the six little triangles at the bottom and right edges of the Character window.

The Styles window lets you see how each character will look when it has different styles applied to it. It shows plain, **bold**, *italic*, underline, outline and shadow.

Editing a Character

The default tool when you first start up the editor is the Pencil. You can use the Pencil to both draw (turn on) and erase (turn off) pixels (the black blocks) in the Character window. The Pencil will draw in the opposite color of the pixel that you start on. To draw with the Pencil just click the mouse button for single pixels or drag the mouse with the button down for a continuous line. Each time you let up on the mouse button the Styles window is updated. Play around with Pencil now by making a few small changes to the letter "M".

Note: Drawing above the ascent control or below the descent control is ignored when saving character changes. However, drawing to the left of the origin control (left kerning) or to the right of the width control (right kerning) will be saved with the character.

Other Tools

There are seven other tools available to you while editing characters: Marquee, Hand, Four Arrows, Eraser, Straight Edge, Rectangle, and Oval.

Draw a line with the Straight Edge by positioning the pointer to the desired starting point for one end of the line and then dragging to the other end.
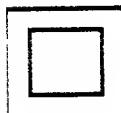
While we're at it, go ahead and draw a rectangle and an oval with their respective tools. Position the pointer to one corner and drag to the other. Notice that as long as you continue to hold down the mouse button you can make the rectangle or oval larger or smaller by moving the pointer farther from or closer to the starting position.

Now select the Eraser tool and use it to clean up your mess. We'll wait right here.

There are two other ways to erase things you have drawn in the Character window—Undo and Revert. The Undo menu item in the Edit menu will undo the last thing you did in the Character window. The Revert menu item in the File menu will restore the character being edited back to the way it was when you first began editing it. This undoes all of your changes.

The Hand is used for moving the character around in the Character window. This is especially important for very large fonts since you may not be able to see all of a character at once. To use the Hand tool, select it and then position the little hand in the editing window and drag in any direction. Think of the hand as grabbing the piece of paper you're drawing on and moving it.
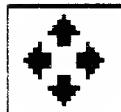
The Four Arrows tool is similar to the hand tool except that it only moves the font rectangle controls and not the character. This is analogous to moving the lines on grid paper while leaving the drawing in the same place. We're not sure why this is useful, but the Macintosh font editors we've seen let you do this, so we figured we had to let you do this too.

The Marquee tool, also called the Selection Rectangle or Editor's Box, lets you select a rectangular portion of the editing window and then cut, copy, or clear it. In addition, if you cut or copy a portion of the editing window you can then paste that portion back anywhere in the editing window.

This is a rather sketchy outline of the use of the tools. For more detail, please refer to the reference section.

Font Rectangle Controls

The font rectangle controls are used to change the ascent, base line, descent, leading, origin and width of characters as described in chapter 2, Anatomy of a GS Font. To move the controls, position the pointer on them and drag to the new location.

> *Note: Changing the origin or width controls only affects the character you are currently editing. However, changing the ascent, base line, descent or leading controls affects the entire font (i.e. all characters). If you're not careful, you could accidently cut the top or bottom off of every character in the font. Don't be afraid to play with the controls though. Your changes aren't implemented until you close the Character window and return to the Main screen.*

Close and Cancel Boxes

At the far left edge of the title bar of the Character window there is a box called the Close box. Clicking in this box indicates that you want to save any changes you made to the character and put it back in the font.

Conversely, at the far right edge of the Character window title bar is an X between two vertical bars. This is the Cancel box. Click in this box if you want to throw away any changes you made to the character and return to the Main screen.

Click in the Cancel box and return to the Main screen.

Saving changes and Quitting

If we were really doing some serious editing and not just goofing off we would want to save the changes made to the font before quitting. This is easily done by selecting the Save menu item in the File menu.

To quit GS Font Editor, just select Quit from the File menu and poof, you're out. If you made changes to the font, you'll be asked if you would like to save them before quitting. For this tutorial, you can just answer No.
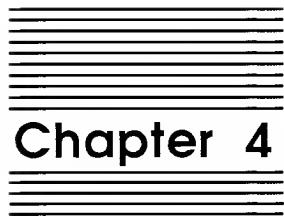
Chapter 4

GS Font Editor Reference

This section contains reference information that describes every feature of GS Font Editor in detail.

Main Screen

The first thing you see when you start up GS Font Editor is the Main screen.
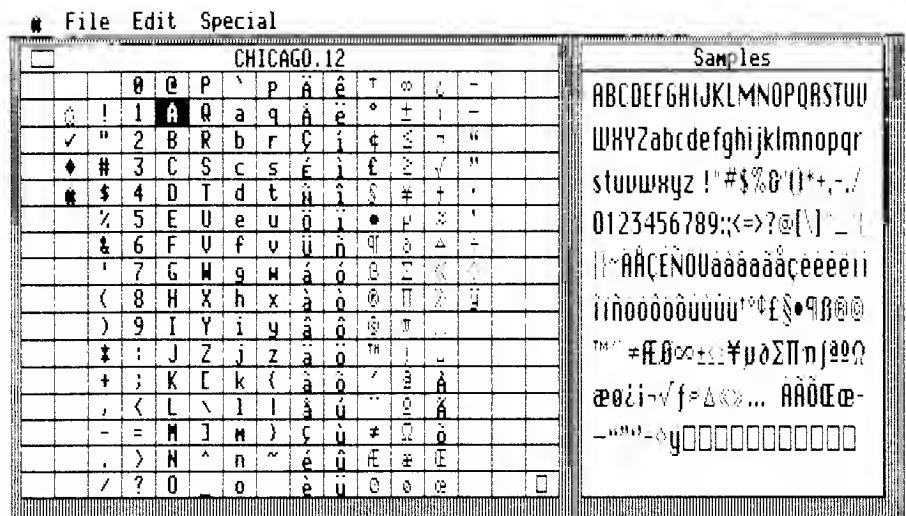
Figure 8.

The Main screen includes three major elements—the menu bar, the Font window, and the Samples window. The menu bar has four menus, Apple, File, Edit and Special, which each contain their own menu items/commands. (The menus are discussed in detail later in this chapter, see page 31.)

Font Window

The Font window is basically a 16 by 16 grid of all the possible characters in a font (255) plus the missing symbol. The characters in the Font window are not the actual characters of the font you are editing. They are for reference only. The actual characters of the font you are editing are displayed in the Samples window.

Missing Characters and the Missing Symbol

Not all characters need to be defined in a single font. The character in the lower right-hand corner of the Font window represents the missing symbol. The missing symbol is what is drawn, by most software, in place of any missing (undefined) characters. For example, in the Samples window, the actual missing symbol of the current font is drawn for any characters that are undefined in that font. In most fonts, the missing symbol is a hollow rectangle. However, it can be anything—a vertical bar, a dot, etc.

Font Name and Font Size

The Font window also shows the filename of the current font that you are editing. When you first start up GS Font Editor, the current font is the default font, CHICAGO.12. (To load a different font from disk for editing, see the explanation of the Open command on page 32.)

The filename of a font is usually the concatenation of the font name and the font size, however, this is not a requirement and is not always the case.

Selecting a Character to Edit

To select a character to edit, move the pointer to the character and double click. Double clicking a character in the Font window will immediately take you the Edit screen where you can edit that character.

> *Note: If the character you want to edit is already selected, you really only have to click on it once more to select it for editing. We knew that lazy people would love this one.*

Another way to choose a character for editing is to just type that character on the keyboard. For the funny characters (foreign language characters and special symbols) refer to the key chart in the Appendix for information on how to type them.

Not all characters need to be defined in a font. Characters which are not defined in the font you are editing are not shown in the Font window (i.e. they look blank). The exceptions to this are Null ($00), Tab ($09), Return ($0D), Space ($20) and Delete ($7F). They look blank in the Font window but they are usually defined in most fonts.

You can select an undefined character for editing by double clicking in its empty space in the Font window. This allows you to add characters that didn't previously exist in the font.

You can edit the missing symbol in the lower right corner of the Font window by double clicking on it.

Close Box

The close box in the upper left corner of the Font window may be clicked on to close the current font. It is the equivalent of choosing the Close command from the Files menu. (See page 34.)

Samples Window

The Samples window shows as many of the actual characters of the current font as will fit in the window. For a small font (14 point and under) you should be able to see most if not all of the characters. For larger fonts, only as many characters as will fit will be shown in the Samples window.

You will notice that whenever you load a new font, the Samples window changes to reflect that font. Also after you have edited a character, the changes will be reflected in the Samples window, assuming of course that the character is shown in the Samples window.

Typing in the Samples Window

If the Samples window doesn't show a particular character that you want to see, or if you want to see how two or more letters look together, you can type in the Samples window.

To type in the Samples window just click in it. This will erase all the stuff we thought you wanted to see and make room for all the stuff you really want to see.

Type the text you want. If you make a mistake, use the Delete key to backup and make corrections.

If you want to you can press Return when you reach the end of the line and the cursor will move down one line, right below the start of the previous line. Otherwise the characters will automatically wrap around to the next line. (There is no automatic word wrapping however. What did you expect, MultiScribe GS!)

> *Note: Once you type in the Samples window, the only way to get back the default samples is to type them yourself or load in another font. Don't forget to save any changes you may have made to the current font!*

Extra Characters

Most fonts for the Apple II have 128 characters or less. GS style fonts can have up to 255 characters. To type in characters beyond the normal 128 that you are used to typing, see the key chart at the end of the manual in the Appendix.

Edit Screen

After selecting a character to edit, you will see the Edit screen.
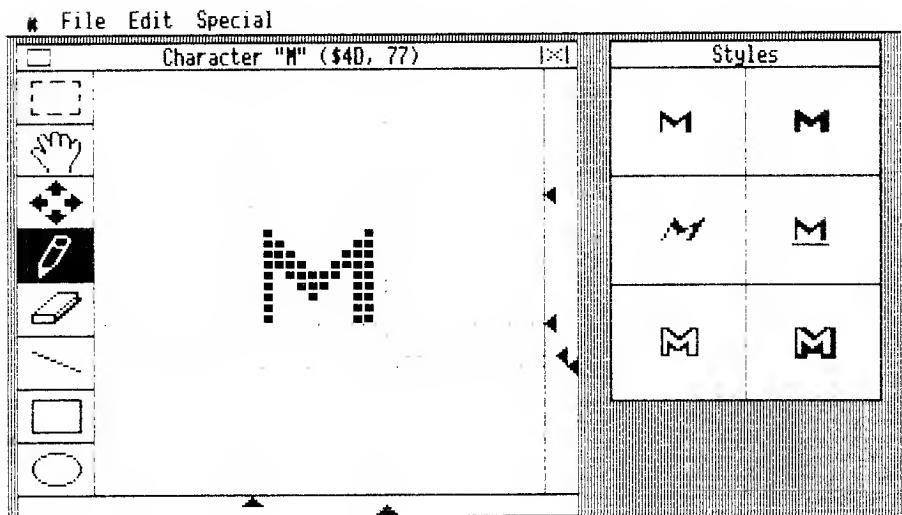
Figure 9.

The Edit screen includes three major elements—the menu bar, the Character window, and the Styles window. The menu bar has four menus, Apple, File, Edit and Special, which each contain their own menu items/commands. (The menus are discussed in detail later in this chapter, see page 31.)

Character Window

The Character window includes these items: the character name, its ASCII code in hex and decimal, the tool palette, the font rectangle controls, the editing window, and the close and cancel boxes.

The editing window can be thought of as an actual window that provides a 40 by 40 pixel view into a 128 by 128 pixel edit buffer.

For most fonts, whole characters can easily be viewed in the editing window. For very large fonts, you will need to use the hand tool to see the different parts of a character.

The character itself is shown 4 times its actual size in the edit window. This is very similar to the way FatBits (or Zoom) works in most paint programs. Editing the character this way is a breeze compared to trying to edit it in actual size, which would require the eyes of Superman.

Character Name and Number

The character name (the letter it matches) and number (its ASCII code, shown in hex and decimal) appear in the middle of the Character window title bar. A character's image can be anything you want it to be, so they come in handy when what you are editing isn't actually a letter (e.g., a strawberry or a tree).

The Tools

The Tool palette contains all the tools that can be used to create and modify characters. They are Marquee, Hand, Four Arrows, Pencil, Eraser, Straight Edge, Rectangle and Oval. You can tell which tool is currently selected because it is highlighted in the Tool palette.

You will notice that the pointer takes different shapes depending on the currently selected tool. For example, the pointer is shaped like a crosshair when you select Oval, and it is shaped like a rectangle when you select Eraser.

A description of each of the tools follows.
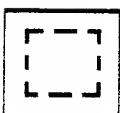
Marquee: The Marquee (sometimes referred to as the Selection Rectangle or Edit Box) lets you select part of a character for further editing action. Here's how to use the Marquee.

1. Select the Marquee tool.
2. Position the pointer on one corner of the area you want to edit and then drag the pointer diagonally across the part of the character you want to edit. A gray mask will be drawn over that part of the character.

3. Pull down the Edit menu and select the command you want to perform.

Hand: The Hand tool is used for moving the character around in the editing window. This is especially important for very large fonts since you may not be able to see all of a character at once. To use the Hand tool, select it and then position the little hand in the editing window and drag in any direction.

Four Arrows: The Four Arrows tool is similar to the hand tool except that it only moves the font rectangle controls and not the character. This is analogous to moving the grid on your grid paper while leaving your drawing in the same place. To use the Four Arrows tool, select it and then position the little crosshair in the editing window and drag in any direction.

We're not sure why this is useful, but the Macintosh font editors we've seen let you do this so we figured we had to let you do this, too.

Pencil: The Pencil tool lets you draw freehand while editing a character. To use the Pencil, click to make individual points or drag to make lines.

> *Note: Pressing the mouse button with the pencil will change the pixel under the point of the pencil from white to black, or black to white. And the pencil will continue to draw in that color until you release the mouse button. This allows you to use the pencil for drawing and erasing.*

Eraser: The Eraser wipes clean any part of a character, quickly and easily. To use the Eraser, click or drag the eraser on a character wherever you want to erase.

> *Note: The eraser is good for erasing a wide path of pixels. If you want to do precision erasing, use the pencil.*
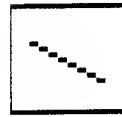
Straight Edge: The Straight Edge (sometimes referred to as a Line tool) draws a straight line at any angle. To draw a line, position the pointer to where you want one end of the line and then drag the pointer to where you want the other end of the line.
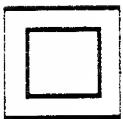
Rectangle: The Rectangle tool lets you draw rectangles in a character. To draw a rectangle, position the pointer to where you want one corner of the rectangle and then drag the pointer diagonally until the rectangle is the size you want.
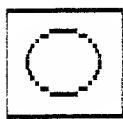
Oval: The Oval tool lets you draw ovals in a character. To draw an oval, position the pointer to where you want to start the oval and then drag the pointer in any direction until the oval is the size you want.

> *Note: Drawing above the ascent control or below the descent control is ignored when saving character changes. However, drawing to the left of the origin control (left kerning) or to the right of the width control (right kerning) will be saved with the character.*

Font Rectangle Controls

The font rectangle controls are used to change the ascent, base line, descent, leading, origin and width of characters as described in chapter 2, Anatomy of a GS Font. To move the controls, position the pointer on them and drag to the new location.

> *Note: Changing the origin or width controls only affects the character you are currently editing. However, changing the ascent, base line, descent or leading controls affects the entire font (i.e. all characters). If you're not careful, you could accidently cut the top or bottom off of every character in the font. Don't be afraid to play with the controls though, your changes aren't implemented until you close the Character window and return to the Main screen.*

Changing the Origin and Width: The distance between the origin and width controls determines the character width. Moving both controls to the same position makes the character width zero. (Remember, the character width is different than the image width. The image width is the actual width of the pixels that make up the character.)

The distance between the origin control and the leftmost pixel determines how far the character will be drawn from the previous character (position the origin control to the left of the leftmost

pixel) or how much it will overlap the previous character (position the origin control to the right of the leftmost pixel).

The distance between the width control and the rightmost pixel determines how far the next character will be drawn from this character (position the width control to the right of the rightmost pixel) or how much this character will overlap the next character (position the width control to the left of the rightmost pixel).

Note: If the origin and width controls occupy the same position, the origin control will have to be moved to the left before the width control can be moved.

Changing the Ascent, Base Line, Descent and Leading: The base line control separates the ascender part of a character from the descender part. The ascent control determines how far above the base line a character may extend. The descent control determines how far below the base line a character may extend. The ascent and descent determine the font height.

The leading determines the amount of blank space between lines of single-spaced text—the distance between the descent line of one line of text and the ascent line of the next line of text.

Note: If the base line, descent or leading controls occupy the same position, the lower control will have to be moved down before the higher control can be moved (e.g., the leading control would have to be moved down before the descent control could be moved either way).

Close and Cancel Boxes

At the far left edge of the Character window title bar there is a box called the Close box. Clicking in this box indicates that you want to save any changes you made to the character and put it back in the font (in memory, this has no affect on actual font on disk until you do a Save) and return to the Main screen.

Conversely, at the far right edge of the Character window title bar is an X between two vertical bars. This is the Cancel box. Click in this box if you want to throw away any changes you made to the character and return to the Main screen.

Styles Window

The Styles window shows you the character that you are editing in actual size and lets you see how it will look when it has different styles applied to it. It shows plain, **bold**, *italic*, underline, outline and shadow.

> *Note: Actual size is a relative term. The actual size we are referring to in the Styles window is approximately twice as tall and twice as wide as what would be printed on the printer.*

Turning Styles On and Off

The Styles window can be turned on and off with the Hide/Show Styles command in the Special menu (see Hide/Show Styles on page 41.)

The Menus

A description of each of the menus and their respective menu items follows. (Shortcut keystrokes are listed in parenthesis after each menu item.)

The Apple Menu

About... (⌂ ?)

Selecting About will show the version number of GS Font Editor. Click on the OK button (or press Return) to leave this dialog box.

File

New	⌘N
Open	⌘O
Close	⌘W
Save	⌘S
Save As...	
Revert	
Quit	⌘Q

The File Menu

The File menu has the following commands: New, Open, Close, Save, Save As, Revert, and Quit. A description of each item follows.

New (⌘ N)

New is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
Selecting New will clear the current font from memory. The font size of the new "empty" font will be the same as the font previously in memory. However, you can change the size to anything you want.

If you have not saved the current font or if you have made changes to it since you last saved it, you will be asked if you would like to save it before starting a new one. Your options are Yes, No, and Cancel. Choosing Yes (by clicking on the Yes button or pressing "Y" or Return) will save the font under the current filename. Choosing No (by clicking on the No button or pressing "N") will go ahead and erase the font from memory. Choosing Cancel (by clicking on the Cancel button or pressing Escape) will return you to the current font.

From the Edit screen (looking at the Character window):
Selecting New from this screen will erase the character you are working on and let you start with an empty editing window.

If you accidentally erase a character, you can restore it by choosing the Revert command in the File menu.

Open (⌘ O)

Selecting Open will show you a list of all the GS style fonts on the current disk. If there are more than 8 fonts, you can click on the Arrows in the Scroll Bar (to the right of the font names) to scroll through the list.
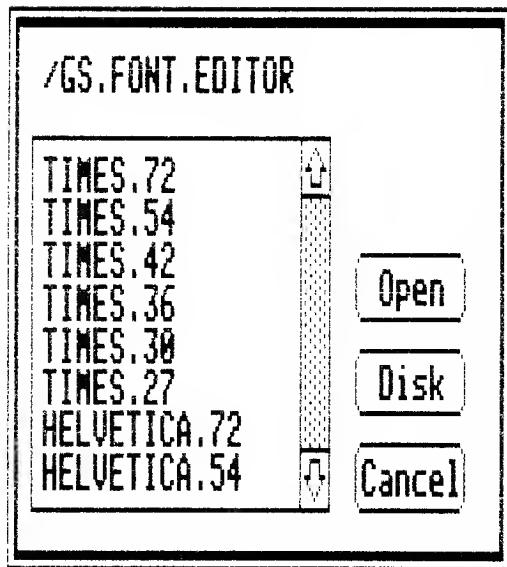
Figure 10.

To select a font to open, click on its name (to highlight it) and then click on the Open button or press Return. As a shortcut, you can open a file by double clicking on its name.

If you decide not to open a font, click on the Cancel button (or press Escape).

If you select a font to be opened and haven't saved the current font, you will be asked if you would like to save the current font before opening the new one. Your options are Yes, No, and Cancel. Choosing Yes will save the current font and then open the new one. Choosing No will go ahead and open the new font without saving the current font. Choosing Cancel will abort the Open command and return you to the current font.

Subdirectories: After you choose Open and have a list of files, you may notice a "/" after some names. This tells you that it's a subdirectory rather than a font. You can open a subdirectory and see all the fonts that are in it by selecting it and clicking the Open button or by double clicking on it.

To back up to the directory you were in before you opened a subdirectory just click on the directory name at the upper left corner of the Open dialog. If the directory name begins with a "/", you are at the volume (main) directory and can't back up any more.

Disk: Clicking on the Disk button will display the fonts on the next available disk drive.

Keyboard Shortcuts: Pressing Return is the same as clicking the Open button. Tab is the same as Disk and Escape is the same as Cancel.

Close (⌘ W)

Selecting Close (or clicking in the close box on the title bar of the Font window) allows you to close the current font. If you haven't saved the current font since making changes to it, you will be asked if you would like to save the font before closing. Your options are Yes, No, and Cancel. Choosing Yes will save the font under the current filename and then close it. Choosing No will go ahead and close it without saving the current font. Choosing Cancel will return you to whatever you were doing before you selected Close.

Save (⌘ S)

Selecting Save will save the current font without prompting for a name. The current filename will be used. (The current filename is the name of the most recently opened or saved font.) Fonts are always saved as GS fonts.

Save As... (⌘ A)

Selecting Save As will let you save the current font under the name of your choosing. You will see the current directory along with the current font name and will be prompted for the new name. Although not required, we recommend ending all font names with the size so that they can be easily identified later when you look at a list of the fonts on a particular disk.

```
┌─────────────────────────────────┐
│ ┌─────────────────────────────┐ │
│ │  /GS.FONT.EDITOR            │ │
│ │                             │ │
│ │                             │ │
│ │  Save font:                 │ │
│ │  ┌───────────────────────┐  │ │
│ │  │ CHICAGO.12            │  │ │
│ │  └───────────────────────┘  │ │
│ │                    ┌───────┐ │ │
│ │  as:               │ Save  │ │ │
│ │  ┌──────────────┐  └───────┘ │ │
│ │  │              │  ┌───────┐ │ │
│ │  └──────────────┘  │Cancel │ │ │
│ │                    └───────┘ │ │
│ └─────────────────────────────┘ │
└─────────────────────────────────┘
```
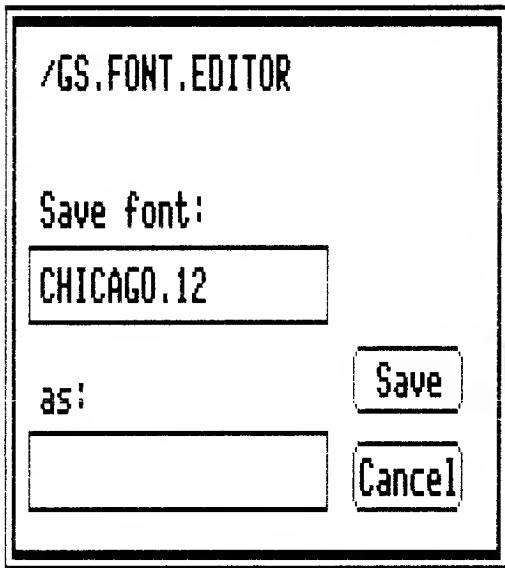
Figure 11.

If you make a mistake while entering the name, use the Delete key to backup and make corrections. After typing in the new name, click on the Save button (or press Return). If you do not want to save the font, click on the Cancel button (or press Escape).

Note on Filenames: When you save a file on disk, the name you give it must follow certain naming conventions. All names must start with a letter (A-Z) and may consist of letters, numbers and periods only. The maximum length for a name is 15 characters. Here are a few examples:

Good names	Bad names
FONT.12	NEW FONT
TEST.FONT.24	36.FONT

Revert (⌂ R)

Revert is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
Selecting Revert will let you revert to the last saved version of your current font. Click on the OK button (or press Return) to proceed or, if you don't want to revert, click on the Cancel button (or press Escape).

From the Edit screen (looking at the Character window):
Selecting Revert will throw away all changes you have made to the character and revert to the way it was when you selected it for editing.

Quit (⌂ Q)

Selecting Quit allows you to leave GS Font Editor and start another application. You will be asked if you really want to quit. If you haven't saved the current font since making changes to it, you will be asked if you would like to save the font before quitting. Your options are Yes, No, and Cancel. Choosing Yes will save the font under the current filename and then quit. Choosing No will go ahead and quit without saving. Choosing Cancel will return you to whatever you were doing before you selected Quit.

Edit
Undo ⌂Z
- - - - - - - - - - - - -
Cut ⌂X
Copy ⌂C
Paste ⌂V
Clear
- - - - - - - - - - - - -
Show Clipboard
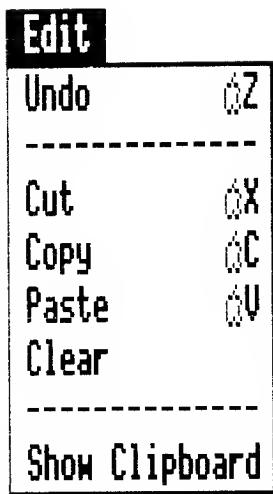
The Edit Menu

The Edit menu has the following commands: Undo, Cut, Copy, Paste, Clear, and Show Clipboard. A description of each command follows.

Undo (⌂ Z)

Undo is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

**From the Main screen** (looking at the Font window):
The Undo command will undo the last change you made to the font. For example, if you cut or cleared a character from the font, Undo can put the character back. This only works on the last character that was cut, cleared or pasted on top of. To undo everything, use the Revert command.

From the Edit screen (looking at the Character window):
The Undo command will undo the last change you made to the character you are editing, returning it to its previous state. If you want to undo something, you must use this command right away, because it only works on the very last thing you did (i.e. the most recent click or drag of the pointer that affected your drawing).

For example, you can use Undo to undo rectangles, ovals, lines, erasures, etc.

Cut (⌅ X)

Cut is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
The Cut command cuts out the character that's currently selected. The character that is cut out is removed from the font but it's saved in memory so that you can paste it back if you want. You can even paste it on top of another character.

From the Edit screen (looking at the Character window):
The Cut command cuts out the part of the character that's inside the Marquee. The part that is cut out is removed from the editing window but it's saved in memory so that you can paste it back if you want. Here's how to cut:

1. Select the Marquee tool.
2. Drag the pointer diagonally across the area you want to cut out.
3. Pull down the Edit menu and select Cut. The part of the character inside the Marquee will be removed.

If you accidentally cut out part of a character, you can restore it by immediately selecting Undo.

If you want to put the cut out part of a character somewhere else on the character, use Paste.

Caution: If you perform two (2) Cut commands in a row, the clipping from the first one will be destroyed. Only the most recently cut clipping is saved.

Copy (⌘ C)

Copy is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
The Copy command copies the character that's currently selected. The copy is saved in memory so that you can paste it somewhere else if you want (i.e. on top of another character).

From the Edit screen (looking at the Character window):
The Copy command duplicates the part of the character that's inside the Marquee, without removing it from the character. The part that is copied is saved in memory so that you can paste a copy somewhere else on the character. Here's how to copy:

1. Select the Marquee tool.
2. Drag the pointer diagonally across the area you want to copy.
3. Pull down the Edit menu and select Copy. The part of the character inside the Marquee will be copied to memory.

Paste (⌘ V)

Paste is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
The Paste command puts back the character that you Cut, or duplicates the character that you Copied.

From the Edit screen (looking at the Character window):
The Paste command puts back the part of the character that you Cut, or duplicates the part that you Copied. To paste a clipping into a new location:

1. Pull down the Edit menu and select Paste.
2. Move the pointer (which is now a box the size of the area to be pasted) to any position in the editing window.
3. Click the button. The previously cut or copied clipping will be placed in the editing window.

You can paste as many times as you like, which means that you can put multiple copies of one clipping in as many different places in the character as you want.

To get out of Paste mode, click on the Marquee tool or any other tool.

Clear (○ Y)

Clear is a dual function menu item, depending on whether you are on the Main screen or the Edit screen.

From the Main screen (looking at the Font window):
The Clear command erases the currently selected character from the font. You would probably use this command to get rid of unused characters in a font to make room for scaling to a bigger size.

From the Edit screen (looking at the Character window):
The Clear command erases everything inside the Marquee. This is a handy way to erase a large section of a character. Use Undo if you selected this command accidentally.

Show Clipboard (○ K)

Selecting Show Clipboard will show the current contents of the clipboard. It could be a whole character if you're on the Main screen, or a piece of a character if you're on the Edit screen. Click on the OK button (or press Return) when you're through viewing the clipboard.

```
┌──────────────────┐
│ Special          │
├──────────────────┤
│ Scale Font...    │
│ Hide Styles      │
│ Get Info         │
│ Edit Next    ⌃-⟩ │
│ Edit Previous ⟨- │
└──────────────────┘
```

The Special Menu

The Special menu contains miscellaneous commands that help you
in font editing. The commands are Scale, Hide/Show Styles, Get
Info, Edit Next, and Edit Previous.

Well, isn't that special! Here is a description of each.

Scale Font... (⌃ F)

The Scale Font command lets you scale an entire font to make it
larger or smaller. It can scale from any size to any size. The only
restriction is that the new size must be smaller than 127 points tall
and also must be able to fit in memory. You'll receive a warning
message if the final size would be too large.

The current size is shown as the "From" size, just type in the "To"
size. Because the vertical and horizontal sizes are entered
separately, you can scale in one dimension more or less than the
other (e.g., you can make a font short and fat, or tall and skinny).

> *Note: The scaling is actually based on the ratio of the "From"
> and "To" sizes. So, to make a 12 point font twice as big ,you
> could either enter 12 and 24 as "From" and "To" respectively or
> enter 1 and 2 as "From" and "To". The ratio is the same. (Both
> numbers must be less than 128.)*

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │                                 │ │
│ │ Select Scale Factors            │ │
│ │                                 │ │
│ │ Vertical                        │ │
│ │ From:    To:                    │ │
│ │ ┌────┐  ┌────┐                  │ │
│ │ │ 12 │  │    │                  │ │
│ │ └────┘  └────┘                  │ │
│ │ Horizontal      ┌──────┐        │ │
│ │ From:    To:    │  OK  │        │ │
│ │ ┌────┐  ┌────┐  └──────┘        │ │
│ │ │ 12 │  │    │  ┌──────┐        │ │
│ │ └────┘  └────┘  │Cancel│        │ │
│ │                 └──────┘        │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```
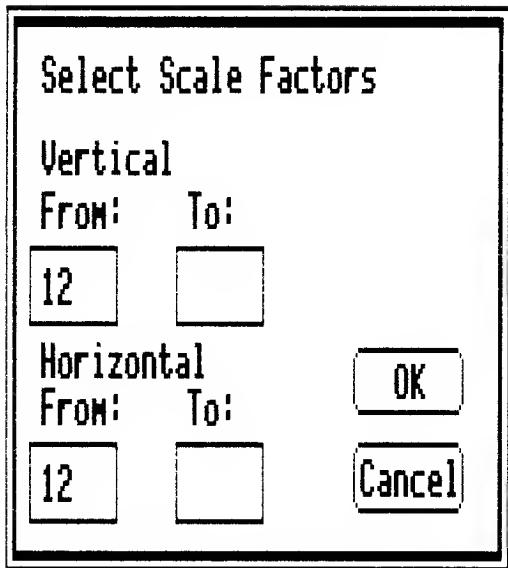
Figure 12.

Press Tab to move from one field to the next. Use Delete to erase a value and enter a new one. After entering the desired sizes, click the OK button (or press Return) to continue with the scaling, or click the Cancel button (or press Escape) to abort the scale operation.

> Note: Scaling a font cannot be undone with the Undo command. However, if the font has been previously saved on disk, you can use Revert to return to the font the way it was before scaling.

Hide/Show Styles (⌘ H)

The Styles window can be turned on and off with the Hide/Show Styles toggle command in the Special menu.

Selecting Hide Styles from the Main screen before selecting a character to edit will prevent the Styles window from being displayed while you are editing. Selecting Show Styles will display the Styles window while editing.

We included the ability to disable the display of styling for those of you that aren't patient enough to wait the split second it usually takes to update the Styles window. (Actually, for extremely complex characters, it can take up to 5 seconds to update the Styles window. What an eternity!)

> *Note: Here's a neat trick. If you select Hide Styles from the Edit screen (i.e. while you are editing a character) the Styles window will continue to be displayed but won't be updated as you edit the character. When you're ready to update the styles again, just select Show Styles and they will be updated.*

Get Info (⌘ I)

Selecting Get Info will show you the font name, font size and font ID number of the current font. You can also modify these values. Press Tab to move from one field to the next. Use the Delete key to erase the current entry and then enter a new one.
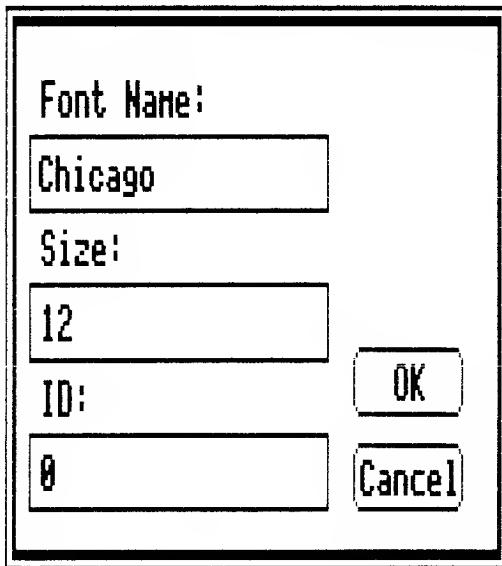
Figure 13.

Clicking the OK button (or pressing Return) will save any changes you made. Clicking Cancel (or pressing Escape) will discard any changes and the previous values will remain unchanged.

Every font has a name (such as Chicago), and a size (such as 12) measured in points. The font name must be less than 26 characters in length. The font size may range from 1 to 127 points. (See the information on font size in chapter 2, Anatomy of a GS Font.)

The font name and size that we are referring to here are different than the filename of the font, which for most fonts also includes a name and size. The font name and size are actually stored within the font itself. They are usually concatenated to form the filename of the font (such as CHICAGO.12). However, this is not required and is not always the case.

Font ID numbers are strange animals that are used to identify families of fonts and are best left alone. (We know you hackers out there think you need to play with this number, so we gave you access to it. Have a ball.)

Edit Next (⌂ ->)

Selecting Edit Next will close the current character, save any changes, and present the next character in the editing window. For example, if you were editing the character "A", after selecting Edit Next or pressing Open Apple-->, "A" would be saved and "B" would be opened up for editing. This saves the time normally required to close the character, go back to the Main screen and choose the next character for editing.

This command works from both the Main and Edit screens.

Edit Previous (⌂ <-)

Edit Previous is similar to Edit Next. Selecting it will close the current character, save any changes, and present the previous character in the editing window. For example, if you were editing the character "B", after selecting Edit Previous or pressing Open Apple-<-, "B" would be saved and "A" would be opened up for editing. This saves the time normally required to close the

character, go back to the Main screen and choose the previous character for editing.

This command works from both the Main and Edit screens.
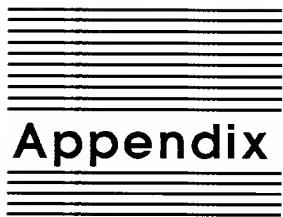
Appendix

Miscellaneous...Tips, Tricks and Techniques

32K Limit

Fonts are limited to 32,768 bytes. This is more than adequate for most fonts. However, if you want to create a very large font (say, 72 point or larger), you may have to break the font up into 2 or more files. We recommend putting upper case letters and numbers in one file and lower case letters and special characters in a second file.

High Quality Printing

Be aware that most programs try to use a font twice the size of the one you've indicated when they print in high quality mode. When you print in high quality mode, you won't see the changes if there is a font twice its size that doesn't incorporate the same changes. If there is no font that's twice the size, no problem, you'll see your changes in the print outs.

Key Chart

The figure below shows how to access each character in the font from the keyboard. These keystrokes are entered differently. Single key sequences are easy. Just press the key corresponding to the character you want.

To enter the key sequences beginning with OPT (meaning Option— also known as the Solid Apple key), just hold down the Option key, then press and release the second key.

The S-O sequence means Shift and Option together. Hold both these keys down and press and release the last key.

Codes that start with O- require the Option key and the second key in the sequence to be pressed and released. Then press the last key in the sequence.

Second Hex Digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	cntrl @	cntrl P	spc	0	@	P	`	p	O-u A	O-i e	OPT t	OPT 5	S-O /	OPT -	S-O 7	S-O k
1	cntrl A	cntrl Q	!	1	A	Q	a	q	S-O a	O-u e	S-O 8	S-O =	OPT 1	S-O -	S-O 9	S-O l
2	cntrl B	cntrl R	"	2	B	R	b	r	S-O c	O-e i	OPT 4	OPT ,	OPT l	OPT [	S-O 0	S-O ;
3	cntrl C	cntrl S	#	3	C	S	c	s	O-e E	O-` i	OPT 3	OPT v	S-O [		S-O w	S-O z
4	cntrl D	cntrl T	$	4	D	T	d	t	O-n N	O-i i	OPT 6	OPT y	OPT f	OPT]	S-O e	S-O x
5	cntrl E	cntrl U	%	5	E	U	e	u	O-u O	O-u i	OPT 8	OPT m	OPT x	S-O]	S-O r	S-O b
6	cntrl F	cntrl V	&	6	F	V	f	v	O-u U	O-n n	OPT 7	OPT d	OPT j	OPT /	S-O t	S-O n
7	cntrl G	cntrl W	'	7	G	W	g	w	O-e a	O-e o	OPT s	OPT w	OPT \		S-O v	S-O m
8	cntrl H	cntrl X	(	8	H	X	h	x	O-` a	O-` o	OPT r	S-O p	S-O \	O-u y	S-O u	S-O ,
9	cntrl I	cntrl Y	)	9	I	Y	i	y	O-i a	O-i o	OPT g	OPT p	OPT ;	S-O `	S-O i	S-O .
A	cntrl J	cntrl Z	*	:	J	Z	j	z	O-u a	O-u a	OPT 2	OPT b	OPT SPC	S-O 1	S-O s	OPT h
B	cntrl K	cntrl [	+	;	K	[	k	{	O-n a	O-n o	O-e / O-e	OPT g	OPT A	S-O 2	S-O d	OPT k
C	cntrl L	cntrl \	,	<	L	\	l			OPT a	O-e u	O-u / O-u	OPT 0	O-n A	S-O 3	S-O f	
D	cntrl M	cntrl]	-	=	M	]	m	}	OPT c	O-` u	OPT =	OPT z	O-n O	S-O 4	S-O g	
E	cntrl N	cntrl ^	.	>	N	^	n	~	O-e e	O-i u	S-O '	OPT '	S-O q	S-O 5	S-O h	
F	cntrl O	cntrl _	/	?	O	_	o	del	O-` e	O-u u	S-O o	OPT o	OPT q	S-O 6	S-O j	

Figure 14.

Open Apple Shortcuts for menu items

Apple
      About...   ⌘ ?

File
   New   ⌘ N
      Open   ⌘ O
      Close   ⌘ W
      Save   ⌘ S
      Save As...   ⌘ A
      Revert   ⌘ R
      Quit   ⌘ Q

Edit
      Undo   ⌘ Z
      Cut   ⌘ X
      Copy   ⌘ C
      Paste   ⌘ V
      Clear   ⌘ Y
      Show Clipboard   ⌘ K

Special
      Scale Font...   ⌘ F
      Hide/Show Styles   ⌘ H
      Get Info   ⌘ I
      Edit Next   ⌘ ->
      Edit Previous   ⌘ <-

Help!
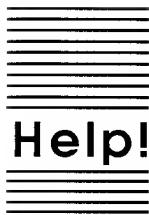
Customer Support Information

If you have questions or problems that your dealer can't answer, you can contact the Beagle Bros Customer Support Staff for expert assistance.

Before calling, check the instruction manual to see if it contains the information you need. Write down a complete description of the problem, the version number of the software, and the names and version numbers of any other programs you're using in connection with our software.

If you have a modem, you may also receive Technical Support on our 24-hour Customer Support System. The system provides an electronic mail and conferencing system, along with the latest information about product updates and changes.

Customer Support:
    (619) 452-5502   8 am to 5 pm, weekdays (Pacific time)

Modem Technical Support:
    (619) 558-6151   24 hours, every day

Fax:
    (619) 452-6374   24 hours, every day

Or, you can write to:
    Beagle Bros, Inc.
    6215 Ferris Square, Suite 100
    San Diego, CA 92121
    Attn: Customer Support

Help!

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